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ABSTRACT

Personal response systems (PRS) bring immediate help to aged and disabled persons at home at the touch of a button. The PRS user wears a tiny radio transmitter as a pendant or a bracelet and can send a telephone signal from any part of the home to a 24-hour emergency center when help is needed. This study examined research on the Lifeline system, which is the most ubiquitous PRS product in the United States at this time and which is used by approximately 200,000 people. A study of the users of Lifeline found them to be, for the most part, women in their late 70's and early 80's, although handicapped persons of all ages are on Lifeline. Most subscribers live alone while others live with disabled spouses. Emergency rates have been shown to be about one-half of an emergency per person per year, and subscriber satisfaction has been shown to be very high. PRS was found to have positive psychological effects on subscribers, with subscribers reporting an increased sense of security. Lifeline has been found to be related to decreased nursing home use and shortened hospital stay. There has been relatively rapid acceptance and dispersion of PRS as an additional home care service. Research has shown PRS to have strong anxiety-reducing effects for subscribers and their families. The resulting sense of security appears to be reflected in a lessened need for formal institutional care and formal home attendant care. (ABL)

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PERSONAL EMERGENCY RESPONSE SYSTEMS--
COMMUNICATION TECHNOLOGY AIDS ELDERLY AND THEIR FAMILIES

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The past ten years has seen, in many countries, deployment of personal response systems (PRS), which bring immediate help to aged and disabled persons at home at the touch of a button. The PRS user wears a tiny radio transmitter as a pendant or a bracelet and can send a telephone signal to a 24-hour emergency center when help is needed no matter where they are in or around their home. Some PRS configurations can also call automatically if the protected person is unusually inactive for a period of time--possibly incapacitated.

When a person is alone behind their closed door, they are most vulnerable. Accidents are common, especially among the aged and disabled, with falling being the most common accident. Falling is not only a dangerous event, it is often demoralizing. If someone cannot reach the phone after they have fallen, they could lie unnoticed for hours, or even days, feeling helpless. Every manager of housing for the elderly is aware of incidents where people have been found dead after days of being alone and unable to call for help.

The long term psychological effects of emergency events at home can be severe. There is uncertainty, anxiety and demoralization for the person who had the accident; there is anxiety and an erosion of confidence for the relatives of that person. People want to continue to live independently, despite growing frailty or disability. But over time, the strain on them and those who care about them becomes too great, and that is often the reason why they enter nursing homes. PRS is one help. It is one additional home support to give confidence that people can live independently despite frailties.

GROWTH OF PRS

This paper reports research on PRS in the United States and primarily with the Lifeline system, which is the most ubiquitous PRS product in the States at this time. PRS is also common in western Europe and in other countries around the world.

In the United States, PRS, represented by a pull cord signaling system, has been in housing for the elderly for years,

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but PRS involving the ability to activate an alarm by a portable radio transmitter has been available only in the last 10 to 15 years, and, in the United States, is mostly used in dispersed housing--that is individual single homes or apartments. Today more than 200,000 subscribers have PRS in the United States and Canada. They are monitored 24 hours-a-day, 7 days-a-week by emergency response centers located in hospitals, or they are monitored by special centers established by private companies with regional or nationwide coverage.

One center is capable of monitoring a wide area because communications come over telephone lines. The monitoring may be remote, but the response is local. The emergency response center operator, upon receipt of a signal, calls local informal responders (friends, neighbors, relatives) or the formal help network (police, fire, ambulance, etc.).

In many countries, e.g. United Kingdom, Sweden, Norway, Denmark, Israel and Australia, PRS has become a common home and community care service. Technologies vary, with some systems using radio communication to the emergency response center rather than telephone. Also, the emergency response center is sometimes located in community service organizations like police or fire stations rather than in hospitals or private companies. In some systems, formal emergency medical services such as ambulances are dispatched immediately; in others, neighbors, friends or relatives are called first to screen the emergency.

Since 1979 when the first hospital in the United States offered a Lifeline program to persons in their community (there are now 2,600 such local hospital programs in the United States and Canada), the service has grown to monitor over 200,000 people. By this point in time a dozen studies have been done on PRS, revealing benefits to subscribers, to their families and to the health care system.

WHO USES PRS?

First let us consider this: If PRS is openly available in a community where payment is primarily private, who chooses to use it? A study of 335 Lifeline programs representing communities all over the United States yielded good information on typical subscribers (Stafford and Dibner, 1984).

Lifeline subscribers are mostly women (82%) in their late seventies and early eighties. Mean age is 76 years, and mode 80 years. However, handicapped or disabled individuals of all ages are on Lifeline, even infants subject to Sudden Infant Death Syndrome. The mother can give immediate resuscitation after she pushes the button and while professional help is on the way.

Most Lifeline subscribers (80%) live alone while others may live with disabled spouses or are otherwise left alone for periods of time.

Most subscribers (66%) have multiple disabilities. The most common problems are cardiovascular (57%) followed by musculo-skeletal conditions (31%) and rheumatoid disorders (22%), frequent problems of the old.

WHO HAS EMERGENCIES?

Over the years several studies have yielded very similar emergency rates (Sherwood, 1980; Stafford and Dibner, 1984; Gatz, 1988); they approximate one-half an emergency per person per year on a Lifeline system. In other words, if there are 100 persons on a hospital-based program, each year there will be approximately 50 emergencies. Of course some people have no emergencies, and others, more than one. Men were found to have significantly more emergencies than women. The age group with the highest emergency rate was the 30 to 39 year old group which also had a higher rate of neurological and pulmonary disorders.

Subscriber satisfaction with the system is extremely high. Ninety-eight percent of subscribers report being satisfied, moderately satisfied, or very satisfied.

A study by Gatz and Pearson (1988) interviewed 60 Lifeline subscribers in Los Angeles at two points in time after having had Lifeline for a year. Also interviewed were neighbors and relatives as responders. The average age of the subscribers was 78, again mostly women. The modal person was severely functionally impaired but was not socially isolated. Over 50% reported having trouble with shopping, housework and laundry.

Forty percent of the emergencies responded to were resolved at home by a neighbor or family member; sixty percent required a formal medical service; and thirty-six percent of the emergencies required hospital admission. In one typical emergency a frail 74 year old woman who had had seven pacemakers pressed her emergency button at 6:45 a.m. when she was having severe chest pain. The central response operator spoke to the subscriber, and paramedics were at her home within five minutes of being called. She was taken to an intensive care unit of the hospital nearest her home where she remained for five days. She later told a reporter "Thank God for my little machine--I think it saved my life."

Gatz and Pearson found that those who are most severely functionally impaired are most likely to have emergencies and to use the system, especially if they are also socially isolated.

PSYCHOLOGICAL EFFECTS

PRS was found to have positive psychological effects on subscribers in the Gatz/Pearson study. Though the subscribers as a whole became more frail and physically impaired over the year's time, their ratings of their own health significantly increased. They were less likely to report episodes of dizziness, lightheadedness or seizures, and they said they felt less vulnerable and better about themselves and about their safety in their home. They reported an increased sense of security. One said "It gives me confidence. If I didn't have this system, I'd be scared to move around alone." Another said "I'm alone--It gives me satisfaction to know that somebody cares." "It's wonderful--it's like having a person in the house."

Subscribers did not report being any more happy during that year nor did they indicate any improved sense of control over their lives, but in light of their increased frailty, the fact that they stayed feeling stable is notable.

Anxiety about medical emergencies decreased. There was even a trend toward reduced fear of crime.

Relatives and neighbors interviewed felt that PRS had changed the subscriber's life. They themselves felt increased security and peace of mind about their relative's safety and felt that the subscriber was having increased feelings of independence and self-reliance. One said "She can walk in the yard more often and move around the house more freely without worrying." Another daughter said "It has eased my mind. I can get out and do a few things without worrying about Mom, and I feel better about her." In general, interviewer ratings showed a significant decrease in the families' sense of burden and no change in level of involvement with the Lifeline subscribers. Since the physical frailty of the subscribers had increased over the year, one would have expected an increased sense of burden. There was also a decrease in feeling angry about interactions with the older person.

USE OF HEALTH SERVICES

Several studies have shown that having Lifeline affects subscribers' use of health services. Sherwood et al (1980), in a study comparing 200 frail, functionally impaired, medically-vulnerable elderly persons using Lifeline with a matched control group over a one-year period, found a significant difference in nursing home use, with experimentals averaging one day in a nursing home during the year compared to 13 days for controls. No significant differences appeared in relation to acute hospital stay, although three subsequent studies (Koch, 1984; Dibner, 1985; and Cain, 1987) showed fewer admissions to hospitals and substantially shortened hospital stay with Lifeline. The Sherwood

study found the most dramatic effects on feelings of security to occur with that subgroup of persons who were functionally impaired, but not socially isolated. The most socially isolated actually had a heightened concern about their health and safety, leading Sherwood to conclude that bringing services to self-isolated persons may make them more aware of their needs.

Two recent studies focused on savings in home attendant service use through the use of Lifeline (Dixon, 1987; Coordinated Care, 1987). Home attendants, also called personal care attendants, often spend hours, not in performing personal chores, but merely being a companion or being available for safety purposes. Two agencies in New York state, which is the most advanced in providing personal care attendant services, posed the question: Might PRS substitute for personal care attendant hours spent in "guardian" activities?

One study (Dixon, 1987) found that, on the average, each participant needed 91 fewer hours of care each month after the installation of personal response service, resulting in savings of approximately $565 per client, per month. A second study in Buffalo, New York (Coordinated Care, 1987) saved an average of 144 hours per month of personal care attendant services by using PRS.

And clients seemed satisfied with the new arrangement; none of them asked to have the personal response service removed because of dissatisfaction or because of the fear of being alone. Clients who were severely disabled and lived alone said that the presence of the home attendant was not essential to making them feel safe. Some said they enjoyed the privacy when the attendant left. The authors concluded that PRS enhanced clients' self-sufficiency and was cost effective.

Several Veterans Administration Hospitals in the United States are using Lifeline in their Home Care Program, primarily for spinal cord-injured and other severely disabled persons. One study at a Veterans Hospital in California (Cain, 1987) examined patients who were on Lifeline for a minimum of four months for rates of admission and length of stay for a period prior to and while they were on the Lifeline service. Patients ranged in age from a 29 year old quadriplegic to a 101 year old veteran with cardiac insufficiency. Mean age was 73 and reflected the normal Veterans Hospital population. Before Lifeline, patients in the study totaled 114 admissions, and during the period after Lifeline, only 71 admissions. The average length of stay per admission prior to Lifeline was 23 days whereas on the Lifeline program, the average stay was 13 days. The authors found that subscribers felt more secure and confident about being alone, and their families felt more comfortable leaving them alone. The Veterans Administration is now conducting a larger study at two other hospitals involving 180 patients with matched controls.

A formal cost benefit analysis of the previously mentioned Sherwood study (Ruchlin & Morris, 1981) found that experimentals with Lifeline used fewer medical and social support resources than did controls. There were significantly fewer acu . hospital and nursing home days. Actually, experimentals also had lower utilization rates for community support services such as physical therapy, homemaking services and meals, but these differences were not statistically significant. Comparing the overall savings in medical and social supports over a 13-month period with the costs of the Lifeline service yielded a benefit cost ratio of 1.87. For those patients in the subgroup of severely disabled but not socially isolated, which is the largest naturally occurring group receiving PRS, the benefits exceeded costs by a ratio of 7 to 1.

SUMMARY

To summarize, there has been relatively rapid acceptance and dispersion of personal response service as an additional home care service. A variety of studies in the United States has shown that PRS has strong anxiety-reducing effects on both subscribers and their families. The resulting sense of security is reflected in a lessened need for formal institutional care and formal home attendant care.

REFERENCES

Cain, Betty Ann, Effects of a Lifeline Program on Hospitalization. Masters Thesis presented to the Department of Social Work, California State University, Long Beach, CA, May 1987.

Coordinated Care Management Corporation, Emergency Response System Demonstration Project; Preliminary Report, Buffalo, New York, September 1987.

Dibner, Andrew S., "Effects of Personal Emergency Response Service on Hospital Use." Lifeline Systems, Inc., Watertown, MA, December 1985.

Dixon, Lorie, Evaluation of Electronic Call Device Pilot Project. City of New York HRA Medical Assistance Program, February 1987.

Gatz, Margaret and Pearson, Cynthia, Evaluation of an Emergency Alert Response System from the Point of View of Subscribers and Family Members. University of Southern California, Los Angeles, CA, May 1988.

Ruchlin, Hirsch S. and Morris, John N., "Cost-Benefit Analysis of an Emergency Alarm and Response System: A Case Study of a Long-Term Care Program." Health Services Research, Spring, 1981.

Sherwood, Sylvia and Morris, John N., A Study of the Effects of an Emergency Alarm and Response System for the Aged: A Final Report. Hebrew Rehabilitation Center for the Aged, Boston, MA, January 1981.

Stafford, Juliene L. and Dibner, Andrew S., Lifeline Programs in 1984: Stability and Growth. Lifeline Systems, Inc., Watertown, MA, November 1984.